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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,797	01/03/2002	Takahiro Ishikawa	WATK:193A	9986

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EXAMINER

PITTMAN, ZIDIA T

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 03/13/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/033,797

Applicant(s)

ISHIKAWA ET AL.

Examiner

Zidia Pittman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/603,203.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 4.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al (USPN 4,624,404) in view of Ushikoshi et al (USPN 6,057,513).

Ohmae et al teaches a method for bonding ceramics and metals including a ceramic member (col. 2, l. 44), a metallic member (col. 2, l. 45), a step of uniformly spreading a fine particle material including a cermet over the surface of the ceramic member (col. 2, l. 46-48, 53-55; col. 5, l. 35-38), a brazing/soldering material including a base metal of Al, Ag, Cu or Ni is disposed between the fine particle layer and the metallic member (col. 2, l. 49-52; Fig. 1c), and subsection to thermal heating and a hot hydrostatic pressure treatment to melt the solder and forming a bonding layer comprising the cermet layer and the solder layer (col. 4, l. 56-60; col. 7, l. 56-57; col. 8, l. 1, 24, 47). With respect to the limitation requiring a fine particle material which reduces thermal stress, it is obvious that the cermet layer provided by Ohmae et al, being of the same material as instantly claimed, would meet this limitation.

Ohmae et al does not teach a method for bonding ceramics and metals including a member having a dented portion and a member having a protruded portion

Ushikoshi et al teaches a joint structure of metal member and ceramic member and method of producing the same including a ceramic member having a dented portion (col. 4, l. 31; Fig. 3), a metallic member having a protruded portion (col. 4, l. 29; Fig. 3), an electrically conductive member (brazing material) disposed between the ceramic member and the metallic member (col. 4, l. 29-30; Fig. 3), and heating with the application of pressure to bond the two members together (col. 9, l. 10-17).

Both Ohmae et al and Ushikoshi et al disclose a method of bonding a ceramic member with a metallic member. (see Ohmae et al: abstract; Ushikoshi et al: abstract)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Ohmae et al with the teachings of Ushikoshi et al in order to bond together ceramic and metallic workpieces of specified shapes while improving joint structure and strength between the two.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al in view of Ushikoshi et al as applied to claim 1 above, and further in view of Makino et al (USPN 6,390,354).

The applied reference (Makino et al) has a common inventor (Masayuki Shinkai) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at

the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Ohmae et al in view of Ushikoshi et al teaches all the limitations of claim 9 as recited above for claim 1, except for teaching wherein the fine particle material is ceramic fine particles the surface of which is coated with a metal by plating or sputtering. The fine particle material disclosed in Ohmae et al is a cermet.

Makino et al teaches a method for producing a composite member including providing a ceramic member and a metallic member (col. 3, l. 25-27) and the use of fine particles of ceramics, cermet, or ceramics plated with metal to bond the two members (col. 2, l. 60 – col. 3, l. 8)

Both Ohmae et al in view of Ushikoshi et al and Makino et al disclose a method of bonding a ceramic member with a metallic member. (see Ohmae et al: abstract; Ushikoshi et al: abstract; Makino et al: col. 2, l. 42-50)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Ohmae et al in view of Ushikoshi et al with the teachings of Makino et al in order to reduce the residual stress incurred with the bonding process.

Claims 1, 3, and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al (USPN 4,624,404) in view of Do-Thoi et al (USPN 5,525,432).

Ohmae et al teaches a method for bonding ceramics and metals including a ceramic member (col. 2, l. 44), a metallic member (col. 2, l. 45), a step of uniformly spreading a fine particle material including a cermet over the surface of the ceramic

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member (col. 2, l. 46-48, 53-55; col. 5, l. 35-38), a brazing/soldering material including a base metal of Al, Ag, Cu or Ni is disposed between the fine particle layer and the metallic member (col. 2, l. 49-52; Fig. 1c), and subsection to thermal heating and a hot hydrostatic pressure treatment to melt the solder and forming a bonding layer comprising the cermet layer and the solder layer (col. 4, l. 56-60; col. 7, l. 56-57; col. 8, l. 1, 24, 47). With respect to the limitation requiring a fine particle material which reduces thermal stress, it is obvious that the cermet layer provided by Ohmae et al, being of the same material as instantly claimed, would meet this limitation.

Ohmae et al does not teach a method for bonding ceramics and metals including a member having a dented portion and a member having a protruded portion with one or a plurality of holes in which a hard solder is inserted.

Do-Thoi et al teaches a method for bonding ceramics and metals including a metal member having a dented portion, a ceramic member having a protruded portion with a recess in which a solder is inserted, and heating to bond the two members together (col. 3, l. 10-11; col. 4, l. 43-57).

Both Ohmae et al and Do-Thoi et al disclose a method of bonding a ceramic member with a metallic member. (see Ohmae et al: abstract; Do-Thoi et al: abstract)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Ohmae et al with the teachings of Do-Thoi et al in order to bond together ceramic and metallic workpieces of specified shapes while improving joint structure and strength between the two.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al in view of Do-Thoi et al as applied to claim 1 above, and further in view of Makino et al (USPN 6,390,354).

The applied reference (Makino et al) has a common inventor (Masayuki Shinkai) with the instant application. (see above)

Ohmae et al in view of Do-Thoi et al teaches all the limitations of claim 9 as recited above for claim 1, except for teaching wherein the fine particle material is ceramic fine particles the surface of which is coated with a metal by plating or sputtering. The fine particle material disclosed in Ohmae et al is a cermet.

Makino et al teaches a method for producing a composite member including providing a ceramic member and a metallic member (col. 3, l. 25-27) and the use of fine particles of ceramics, cermet, or ceramics plated with metal to bond the two members (col. 2, l. 60 – col. 3, l. 8)

Both Ohmae et al in view of Do-Thoi et al and Makino et al disclose a method of bonding a ceramic member with a metallic member. (see Ohmae et al: abstract; Do-Thoi et al: abstract; Makino et al: col. 2, l. 42-50)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Ohmae et al in view of Do-Thoi et al with the teachings of Makino et al in order to reduce the residual stress incurred with the bonding process.

Claims 1 and 4-9 are rejected under 35 U.S.C. 103(a) as being obvious over Ushikoshi et al (USPN 6,057,513) in view of Makino et al (USPN 6,390,354).

The applied reference (Makino et al) has a common inventor (Masayuki Shinkai) with the instant application. (see above)

Ushikoshi et al teaches a method for producing a composite member including a ceramic member having a dented portion (col. 4, l. 31-32; Fig. 3), a metallic member having a protruded portion (col. 4, l. 27-29; Fig. 3), disposing a hard solder wherein the base metal comprises Cu, Ni, Ag, and Al as the main ingredient on the surface of the dented portion and disposing thereon the member having the protruded portion (col. 4, l. 43-52; col. 7, l. 19-31), and a step of heating to a given temperature under application of pressure in order to bond the members (col. 9, l. 10-17).

Ushikoshi et al does not teach a method including a step of previously preparing the member having the protruded portion at the end of which is formed a layer comprising a hard solder and a fine particle material, wherein the fine particle material reduces thermal stress and is ceramic, cermet, low-expansion metal fine particles, or ceramic fine particles coated with a metal by plating or sputtering.

Makino et al teaches a method for producing a composite member including a ceramic member (col. 4, l. 29), a metallic member (col. 4, l. 29), disposing an adhesive composition comprising a brazing material and a fine particle material (col. 2, l. 42-63; col. 3, l. 38-45; col. 4, l. 30-63), the fine particle material reduces thermal stress and is ceramic, cermet, low-expansion metal fine particles, or ceramic fine particles coated with a metal by plating (col. 4, l. 30 – col. 5, l. 8).

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Both Ushikoshi et al in and Makino et al disclose a method of bonding a ceramic member with a metallic member. (Ushikoshi et al: abstract; Makino et al: col. 2, l. 42-50)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Ushikoshi et al with the teachings of Makino et al in order to reduce the residual stress incurred with the bonding process.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Naba (USPN 5,807,626), Oda et al (USPN 4,942,999), Takvorian (USPN 4,860,942), Kamigaito et al (USPN 4,645,115), Sato et al (USPN 4,608,321), Francel et al (USPN 3,954,486), Shinkai et al (US Patent Publication 2003/0035975), and Baranov et al (WO 00/05429) are cited as of interest.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zidia Pittman whose telephone number is (703) 305-1248. The examiner can normally be reached on Monday – Thursday and alternate Fridays from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn, can be reached at (703) 308-3318. The official fax phone number for the organization where this application or proceeding is assigned is (703) 305-7718. The unofficial fax number for art unit 1725 is (703) 305-6078.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

BDP
03/05/03


TOM DUNN
SUPERVISORY PATENT EXAMINER
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